

MILLIONS ON INDIAN RAILWAYS - BRITISH COMMON

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ADDITIONAL EXPENDITURE OF 100 MILLIONS

ON

INDIAN RAILWAYS.

BY

GENERAL SIR ARTHUR COTTON, K.C.S.I.

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*Read before the East India Association on 14th December, 1869.*

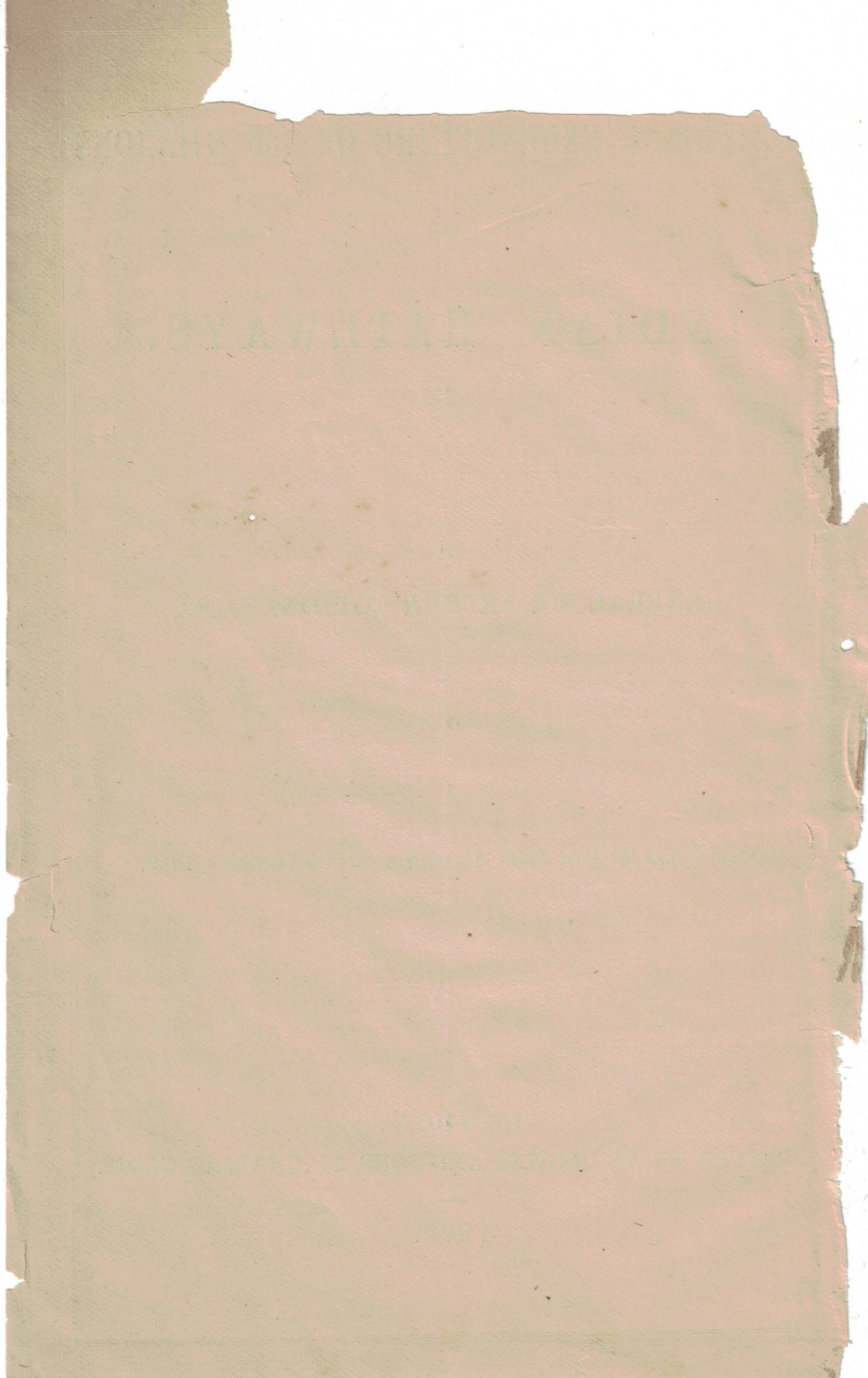
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1870.





East India Association Rooms,

20, GREAT GEORGE STREET, S.W.

9th March, 1870.

DEAR SIR,

The Council request your attendance at the  
Adjourned Meeting for the discussion of the accom-  
panying Paper "On the proposed additional Expenditure  
of 100 millions in Indian Railways," by General Sir  
ARTHUR COTTON, which will be held at the above Rooms  
of the Association on FRIDAY, the 25th instant, at  
Eight P.M.

I remain,

Yours faithfully,

DADABHAI NAOROJI,

*Honorary Secretary.*



20 Great Street, London, W.  
2nd March 1870

Dear Sir,

The Council request your attendance at the  
Adjourned Meeting for the discussion of the second  
paper "On the proposed additional expenditure  
of 100 millions in Indian Railways," by General Sir  
Arthur Cotton, which will be held at the above Rooms  
of the Association on Friday the 25th instant at

Eight p.m.

I remain,

Yours faithfully,

DADABHAI NAORJI

Managing Secretary

JOURNAL  
OF THE  
EAST INDIA ASSOCIATION.

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AFTERNOON MEETING, DECEMBER 14, 1869.

P. P. GORDON, Esq., IN THE CHAIR.

Sir ARTHUR COTTON read the following Paper:—

*On the Proposed Additional Expenditure of 100 Millions on Railways.*

WHEN railways were first proposed, all discussion respecting their suitableness to India, their capability to meet its wants, their superiority to other modes of communication, their effects upon the finances of the country, &c., was absolutely refused. When attempts were made to this purport, an officer, who knew what the feelings of the authorities were, condemned them in an official paper as "adverse discussions," which meant, of course, that discussion was by no means objected to, provided it was all in favour of them. And so well was it understood, that whoever dared to state the other side of the question must do it at his personal peril, that the authorities were left to follow out the plan they had determined upon without one word of real inquiry. Whether the railways would entail a heavy charge upon the revenue, whether they could carry  $\frac{1}{50}$ th part of the traffic of the country, whether they could carry at less than ten times the charge that the country needed, either for goods or for passengers—whether they would enable the country to contend with other countries in the markets of the world—whether it would enable India to meet the urgent demands of England for its produce, and its markets—whether other modes of transit would not be, in the circumstances of India, superior to it in every particular, in first cost, in time of execution, in cost of transit, in the quantities it could accommodate, in the requirements of the country in a military point of view, and in all other points,—not one word was permitted to be said. It was at the peril of his favour with the Government, that any one should dare to utter one word of discussion on these great fundamental points. What must be the consequence of such a mode of dealing with great national interests? Before such discussion the majority are always wrong; the vulgar view of a matter is always a superficial one. Surely we have had lessons enough on this point. When first the discussion of slavery began, we may safely say a majority of fifty to one were in favour of it. And we have had a more recent, and even perhaps a more striking instance of it in the case of the Suez Canal.

When this work was first discussed, I believe every newspaper in England, without exception, was against it; first, it was utterly impracticable; second, it was utterly impolitic; third, it would be an enormous loss; and so on.

As to its practicability, it was in reality one of the simplest matters of engineering that ever was proposed. As to its policy, no money could measure the value to England of a work that went so far towards uniting the two halves of the British Empire together; and as to its returns in money, there was the present value of the trade to India and China, and it was perfectly easy to calculate the saving in the three items of risk, distance, and interest on that value; and allowance could be made both for the rapid increase of trade, under present circumstances, and of the enormous stimulus that would be given to it by thus halving the distance and time, and more than halving the risk. Now that, in a very short time, it is in successful operation, everybody can see that the immense majority were wrong, and the minority, if there was one at all, were right. Surely such a case as this ought to teach us to be willing to hear both sides of a national question, and to enable us to entertain the idea that a minority may be right.

But if this is so with a new question, how much more with one that has already been tried, and in which we have most ample actual data by which to judge of it. If there is a madness greater than that of spending 100 millions without permitting any



discussion, it is that of spending a second without permitting any examination of the results of the first. This is our actual position. We have spent 100 millions on railways in India; they have been in operation from ten or fifteen years downwards; we have had abundance of time to see what they can do and what they cannot do, what they cost us in capital and what in actual taxation; at what prices they can carry, what quantities they do carry, and what quantities and numbers they leave uncarried; and almost all other points are now fully exhibited. Happily, we have not yet seen what they could do in military matters, in case of rebellion; but then we don't need to see that, because we know perfectly beforehand that in such a case they would be destroyed in twenty-four hours; and except for the rivers we should be left without either the old or the new mode of transit, and not a regiment could be moved on lines where there is not water-carriage. Is it anything short of infatuation, under these circumstances, not to examine the results of our first 100 millions before we proceed to spend a second? Yet up to this time I have not heard a word of any such investigation being ordered. If 100,000*l.* is to be spent on the Thames, a Committee of the House of Commons is appointed, and the whole kingdom is searched for experienced or intelligent men, who are invited and encouraged to give their opinions in the freest manner, and not a step is taken till all their opinions are fully and honestly placed in the hands of the whole kingdom in a Blue Book, with the conclusion that a committee of known and approved men have come to upon those opinions.

How is it that in an Indian matter involving in an essential degree every vital question respecting India, with the ample data afforded by an enormous experiment, not one single inquiry is made? In the success or failure of the railways are involved the finance question, our prestige, the loss of millions of lives by famine, or their preservation; the supply of England with the raw material for several of its vital manufactures, and with markets for its manufactured goods; yet all these things are treated as matters that do not require the attention that is given in England to a little insignificant local question, involving an expenditure of one-thousandth part of the sums proposed to be expended in the extension of railways in India.

Surely nothing could show more distinctly than this matter the incalculable importance of this institution. The India Council, from their peculiar constitution, cannot investigate this matter, and the House of Commons, from their utter indifference to everything connected with the largest half of the empire, will not hear a word on the subject; and if there were not independent institutions like this and the Society of Arts, even such vast questions as this, involving in such an extraordinary degree the vital material interests of both halves, would be left altogether unanswered,—India would be put to the expense of 100 millions, and years would be consumed in that expenditure, without one intelligent inquiry on the proceeding. What could I propose as a more legitimate subject of investigation and as a better test of the incalculable importance of this institution than a thorough honest discussion of this great question, in which it is now quite certain that both the Council of India and the House of Commons are complete failures,—neither of them giving the slightest ground of hope that they ever will do anything but the one blindly spend the money and the other permit it, without the slightest attempt to ascertain what will be the effects of it, as already shown by the results of the ample experiment already made.

Now I think the question respecting the railroads already in operation and under execution may be thus stated:—

1. What have they cost?
2. What time have they taken?
3. What are the money returns?
4. What is the cost of transit?
5. What quantities and numbers do they carry?
6. What are the quantities and numbers that they do not carry?
7. What effect have they had on the finances?
8. What are their effects in the great evils of India, such as the famines, the fevers, the salt-tax, &c.?
9. What can they do for the defence of the country?
1. What have they cost?

The total sums expended up to March this year amount to 79 millions, as stated in the Railway Report, but this does not include land and Government inspection, and interest. But as the works are so advanced we may safely take the estimated cost of the whole 5900 miles now sanctioned as the actual cost.



|                                                          |              |
|----------------------------------------------------------|--------------|
|                                                          | £            |
| Amount estimated for 5900 miles in the Railway Report .. | 98,000,000   |
| Add guaranteed interest up to the end of 1868 .. ..      | 26,000,000   |
| Land, &c. .. .. .                                        | 5,000,000    |
|                                                          | <hr/>        |
|                                                          | 129,000,000  |
| Deduct repaid interest .. .. .                           | 13,000,000   |
|                                                          | <hr/>        |
|                                                          | £116,000,000 |

Or, per mile .. .. . £19,000.

I cannot find the exact amount for land, &c., stated in the Railway Reports, but from other sources I think these charges must amount to about 5 millions. This amount does not include compound interest, though of course it has been paid by India, and it must add considerably to the above amount, *viz.* :—about 10,000,000%. for all the time this sum, now amounting to about 18 millions for interest, land, &c., has been advanced, the interest upon it must have been paid. The actual cost, therefore, by the time these 5900 miles are completed will be fully 130 millions, for the amount of interest, &c., is rapidly accumulating. The bare simple interest and land being now 18 millions, the annual payments are—

|                                                         |            |
|---------------------------------------------------------|------------|
|                                                         | £          |
| Interest at 5%. per cent. on 18 millions .. .. .        | 900,000    |
| Deficiency of guaranteed interest paid by Government .. | 1,500,000  |
|                                                         | <hr/>      |
|                                                         | £2,400,000 |

This is the actual charge upon the State, besides the interest of the accumulated compound interest, which would make the charge 3 millions, and which is the real cost of railways to the country, to be paid out of taxes.

In the Report nothing is said about these additional charges, but only the amount of guaranteed interest paid by Government is stated; and in the last Report the Calcutta and South-eastern Railway is left out, and its cost not included in the total. It has been made over to Government, who have not only to pay the interest of 600,000%, which it has cost, but also the loss in working it, which in 1865, the last year reported, was 3000%.

The highest cost of any line is 27½ millions for 1280 miles, or, adding 20 per cent. for simple interest and land, 33 millions, which is 25,000% a mile. This is the main line of the valley of the Ganges, by far the greater part only a single line. I need here only notice the unaccountable cost of this line, hundreds of miles of it being without one single cutting, or embankment, or viaduct worth mentioning, and the whole line of 1300 miles having only one short tunnel, and five or six heavy works, and where labour was not more than one-third the cost of that in England.

2. What time have they taken?

When finished they will have occupied about 27 years, or at the rate of 220 miles a year.

What are the money returns?

The net receipts in the last year were 2 millions, and the capital estimated for the length then opened 71 millions, so that the average interest was 3 per cent. on the bare cost, but adding for accumulated simple interest and land 20 per cent. the capital is 85 millions, and the returns 2½ per cent., the remaining 2½ being paid out of taxes. The actual cost to the country of the railway at this moment is—

|                                       |              |
|---------------------------------------|--------------|
|                                       | £            |
| Capital cost .. .. .                  | 84,000,000   |
| Accumulated interest and land .. .. . | 18,000,000   |
|                                       | <hr/>        |
|                                       | £102,000,040 |

|                                          |            |
|------------------------------------------|------------|
|                                          | £          |
| Interest on ditto at 5 per cent. .. .. . | 5,100,000  |
| Deduct net returns .. .. .               | 2,100,000  |
|                                          | <hr/>      |
| Loss per annum .. .. .                   | £3,000,000 |



And this is, of course, rapidly increasing as the additional lines opened are far less productive than those hitherto in use. As the accounts are made out, that is leaving out the cost of land and the accumulated interest, the railways are shown in the Reports to have paid a little more than the guaranteed interest in 1865, but this was one of four years of extraordinary prosperity, owing to the enormous influx of wealth from the high price of cotton, which brought in the astonishing sum of 130 millions into the country in four years, a sum which could not fail to affect materially both the railways and the revenues, but which cannot be expected to recur again.

It thus appears that the country is at this moment taxed to the amount of 3 millions per annum to pay for the railways, and it must be remembered that at least 50 millions of people are compelled to pay their share of this tax without receiving the smallest benefit from it, being hundreds of miles away from any railway.

#### 4. What is the cost of transit?

The charges for passengers are from  $\frac{1}{4}d.$  to  $\frac{1}{2}d.$  for the third class, and almost the whole travel by this class—about 97 per cent. And there cannot be a doubt that if there were transit at half the speed and half the charge, almost the whole would go by that mode, so utterly unsuited is high speed to the general circumstances of India. The charge for goods is stated, in the Report for 1866-7, to be from  $1\frac{1}{2}d.$  to  $8d.$  per ton per mile. But to enable us to judge of this charge we must consider the circumstances of the country. First we must allow for the value of money as compared with England. The average for all India is probably now about 4 to 1 compared with this country, taking the pound of human food at  $\frac{1}{2}d.$  there against  $2d.$  in England. This would make the above rates equal to from  $5d.$  to  $32d.$  in England. But further, we must remember that the distances there cannot be less than five times what they are here. There is a third consideration, *viz.* that the great mass of goods to be carried there are of small value as compared with those here. Thus, a ton of cotton, value 60*l.*, carried there 500 miles at  $4d.$  a ton a mile, is charged with a sum of  $8l.$ , or 13 per cent. while a ton of manufactured things, worth perhaps 200*l.*, carried in England 100 miles at  $2d.$  a mile, pays 1*s.*, or less than  $\frac{1}{4}$  per cent. This will show how the charges by rail in India are altogether prohibitory of traffic of any consequence, and so, in fact, we find it, that the quantities carried by rail are so utterly insignificant as to be quite imperceptible in comparison of what the traffic there ought to be.

But this brings us to the fifth question. What do the railways carry? Now the total receipts for goods was last year 3 millions on 4000 miles, or 800*l.* a mile, which at an average of  $3d.$  a ton, gives 64,000 tons for the traffic of all the lines.

Now, to show the insignificance of this we have only to compare it with the present actual traffic by the rivers connecting the Ganges and Hooghly, which are only open four or five months in the year; the quantity last year being 1,900,000 tons, and probably at least 3,000,000 tons are carried from the Ganges to Calcutta in the whole year, or fifty times the average by the railways. Again, the Eastern Bengal Railway received 75,000*l.*, or 700*l.* per mile, representing, at  $3d.$  a ton, 56,000 tons in the whole year against 1,900,000 tons conveyed by the rivers between which it is laid in four or five months, so that the quantity carried by the railway is of no consequence whatever, probably not a fiftieth part of what passes by water in the whole year between the Ganges and Calcutta. But this is only what is now carried, not what the circumstances of the country demand. The cost, delay, and risk by these rivers is so great, that if there were steamboat canals throughout the valley of the Ganges it is certain that the total expense of transit by them would not be more than one-fourth of what it is by the rivers, and with a reduction to that extent the traffic would certainly be increased three or fourfold, so that the railway certainly does not convey one-hundredth part of the traffic there ought to be in such an immense population as the plains of the Ganges contain. Thus, the idea that the railways are doing the work of the country in respect of goods traffic is simply ludicrous.

On all the main lines of India, if transit were cheap enough to meet the real circumstances of the country, the traffic would be from one to ten million tons a year, while the present railways, all on main lines, average, as appears from the receipts, about 64,000 tons. To show, in a rough but perfectly correct way, what the traffic of a country should be, in some proportion to its population, we may take this traffic between Calcutta and the western part of the valley of the Ganges, which is at least 3,000,000 tons for a population of about 60 millions, or 50,000 tons per million of people.

This is with a cost of transit of about  $\frac{1}{2}d.$  per mile. If this cost of traffic were



reduced to one-fourth, as it might be, the tonnage would probably be 10 millions, or 170,000 tons per million.

The quantities carried in the Peninsula Railway is 1,000,000<sup>l</sup>. for the last year on 900 miles, or 1100<sup>l</sup>. a mile at 3<sup>d</sup>. a mile, 90,000 tons for probably 10 millions of people, or 9000 tons per million at that high charge.

To compare other countries: the traffic between the Western States of America and the port by one of the three water-lines, that is, by the Erie Canal, is, I believe, about 5,000,000 tons; by the other two lines, *viz.* the Mississippi and St. Laurence, I do not know what it is, but it cannot be less than as much more, making 10 million tons for about 5 millions of people, or 700,000 tons per million, where the people are in a highly wealthy state, and the charge is on an average  $\frac{1}{2}$ <sup>d</sup>. a ton a mile, which, allowing for the difference in the value of money, is equal to  $1\frac{1}{2}$ <sup>d</sup>. in India.

In England the traffic on the Bridgewater Canals is about 2,000,000 tons for probably not 3 millions of people, or 700,000 tons per million, besides the three lines of railway traffic. On the Forth and Clyde Canal it is about one million of tons for a million of people, with water-carriage at 1<sup>d</sup>. a ton. This rough statement will give some substantially correct idea of what the traffic of a certain population ought to be where transit is very cheap according to the state of wealth of the people.

From this we may certainly form a correct judgment of what we have to provide for as goods traffic in India, and to think of single, or even double railways doing anything perceptible towards effecting this is as ridiculous as to think of holding a ship at her anchor by a piece of packthread.

We have another datum for goods traffic in India in the case of the Main Godavery Canal, on which about 200,000 tons a year are carried, which is the traffic of at most 2 millions of people, or 100,000 tons per million, with carriage at about  $\frac{1}{2}$ <sup>d</sup>. a ton a mile, and the population in a thriving state.

And so also with passengers. The number of passengers on the railways is at 1,600,000<sup>l</sup>. for last year, or 400<sup>l</sup>. per mile, allowing  $\frac{3}{4}$ <sup>d</sup>. per head, 250,000<sup>l</sup>. per annum, or 700 per day, of whom three per cent., or twenty-one per day, are First and Second Class.

Now let us only consider this taxing of the country 3 millions a-year to provide these 21 passengers a-day with high speed, for it is certain that all the rest of the 700 would rather travel slower and cheaper.

But as with goods so also with passengers; the proportion travelling by rail must be only a very small portion of the whole of the travellers on these lines.

When I was last in India the roads were filled with travellers who could not afford the charge by railway. And certainly those who do travel at all now are only a small portion of those who would travel if transit were cheap enough to suit the demands of the country. We may be sure that if there were steamboat canals, carrying at  $\frac{1}{16}$ <sup>th</sup> of a penny per mile at fair speeds—which they could do—the numbers would be at least ten times those carried by the railways; so that even in passengers also the railways do not in the least meet the wants of the country. While twenty-one European and native gentlemen are carried cheaply at high speeds, probably 7000 natives are either not conveyed at all, or at prices which are hardly any saving to them.

Not a word of all this appears in the Railway Reports. While they are true Reports of some things, they completely falsify the whole matter to almost every one who reads them. Who would not suppose from reading them that the railways, with the trifling drawback of requiring taxes to the amount of  $1\frac{1}{2}$  million a-year to make up their interest, were really conveying the great traffic of the country in goods and passengers, and that at charges suited to the circumstances of the country? while in reality they are not carrying on an average one-twentieth of the goods or one-tenth of the passengers that require to be moved, and for this the country is really taxed 3 millions a-year.

Thus it is quite possible to write a perfectly true Report, and yet that by certain omissions it shall leave a totally false impression on almost all who read it.

#### 6. What do they *not* carry?

I have already shown that they do not carry one-fiftieth part of the traffic that the country requires, and which there would be if really cheap transit were provided; that they are neither capable of carrying one-fiftieth part of it, nor can they carry at the prices that are essential to the existence of such a traffic. And the same with passengers. To meet the circumstances of the country passenger transit must be provided at  $\frac{1}{10}$ <sup>d</sup>. or  $\frac{1}{20}$ <sup>d</sup>. per mile, and till it is, nine-tenths of those who would travel must either stay at home, or travel just as they did before railways existed.



But why is there not a word of this in the Railway Reports? Why is there not an attempt to show what the real results of the railways are, as to how far they meet the wants of the country? The concealment of these things, as I have said, utterly falsifies the whole subject.

Only place at the end of the flourishing Report on the Eastern Bengal Railway these words, "But so far from its increasing the former traffic, while it carries in the whole year about 60,000 tons, imperfect as the navigation on the rivers in the same line is, they carry in four or five months 1,900,000 tons," and the whole aspect of the affair is completely reversed.

7. What effect have they had on the finances?

In the irrigated districts of Madras the revenue has been increased by 200,000*l.* and 250,000*l.* a-year. There is no room for question there. What increase do the railway districts show? None whatever, due to railways; neither do any of the district reports say a word about any such increase.

For instance, I take the four districts through which the Madras railway passes. The revenue of the four in 1861-2 was 1,100,000*l.*, and in 1867-8 it was 1,160,000*l.*, a trifling increase of 60,000*l.*, or 5½ per cent. in six years, a great part of which was certainly directly due to improved irrigation. On those districts 5 millions have been expended on 450 miles of railway, upon which the whole increase of revenue is only 1 per cent., if it were due to the railways.

So that no perceptible increase has been obtained from this great expenditure in six years, while the railway has not even paid the interest of the money, and there is a debt upon it of, I believe, about 2 millions.

Compare this with an expenditure of half a million on the Godavery irrigation—an increase of revenue of a quarter of a million.

Six districts which have had no railway constructed in them, in the same Presidency, have increased from 1,830,000*l.* to 1,950,000*l.*, or 120,000*l.* a-year, which is 7 per cent., proving that the railway districts have no advantage whatever over those that have none. This is perfectly conclusive as to the effect of the railways on the finances; while, on the other hand, they have, as I have before shown, entailed a loss of 3 millions a-year in the deficiency of the returns. And if it be asked what saving there is in the cost of carriage, the answer is that the charges are professedly the highest possible that will admit of the goods being carried at all, so that if they were raised a very little, even the insignificant quantity now carried would be conveyed by other means.

8. What are their effects on the great evils of India, such as the famines, malignant fevers, cruel taxes of necessities of life, such as the salt-tax, &c.?

First. Have they stopped the famines? When 80 millions had been spent upon them, did they prevent 1½ million dying of famine in Bengal and Madras three years ago? Had this sum been spent in irrigation and navigation works it would have given an average of 400,000*l.* to each of the 220 districts of India, including all the small ones; or about 600,000*l.* to all the large ones, containing an average of 1 million of people—more than has been spent on the Godavery district, which has not only been effectually preserved from famine, but has poured out tens of thousands of tons of food for the famine-stricken districts. And thus nothing can be more certain than that this sum of money—which would have irrigated on an average about half a million of acres in every district, sufficient to secure 250,000 tons of rice, the food of 1½ million—would have effectually secured every district in India from famine or anything approaching to it. But besides this direct effect of enabling each district to grow food enough for itself, it would by cheap transit have set every district at liberty to grow whatever its soil and climate were most suitable for, without any fear of want of food, because it would have been within reach of every other part of India to supply it with food.

Eighty millions spent in providing irrigation would at the same time have supplied at least 40,000 miles of main steamboat canals, or one mile to every twenty square miles of country (besides three times as many miles of branches), so that every part of India would have been in direct communication with every other by water, a means of transit that would have conveyed millions of tons at a charge that would admit of its being carried from one end of India to the other at Rs. 8 a ton, or 1*d.* a lb. Have these 80 millions spent on railways done this? Is not every district in India at this moment exposed to the horrors of famine, excepting the irrigated districts and those immediately adjoining them? A railway cannot convey either the quantities or at the prices that could prevent famine, nor can a few main lines distribute it in



those few districts even through which they pass. And numbers of districts have not a mile of railway in them, nor within hundreds of miles of them, and are no more affected by them than if they were in England.

And so with malignant fevers, such as those which have been raging in Bengal for several years, of which we have such dreadful accounts. Had one-fifth of the money been spent in irrigation in Bengal that has been spent on railways, all those fever-stricken districts would have been so supplied with fresh river-water during the dry season, and so drained of their stagnant water during the rains, that not a vestige of those fevers would have remained.

And so also with that most cruel and monstrous tax—the salt-tax—by which an article so essential to comfort and health to a vegetarian population, and so profusely provided at a nominal cost by God's mercy, is so enormously increased in price that the people cannot afford to purchase half the quantity that is essential to health. In the central provinces the consumption is stated at 70 million lbs. for 9 millions of people, or 8 lbs. per head, even supposing none of the native states are included in this; this quantity is about one-third of that consumed per head where it is cheapest, so that it is certain that this population has not one-third of the quantity of salt that is essential to health, for salt is never consumed in excess. And no wonder; the average price stated in the Report is 13s. per 80 lbs., or 2d. a lb., and no less than 3d. in some parts. This average is twenty times the price in England, and allowing for the difference in the value of money—4 to 1—eighty times.

Now, what would happen in England if such a tax were proposed on salt?

The railways, so far from relieving the country from this most cruel and impolitic tax, are now one main cause of its continuance and repeated additions; for if the country were relieved from the 3 millions a year which the railways really cost it, there would be such an enormous excess of income that the salt-tax might be entirely abolished at once, a measure which would do more to improve our prestige than almost anything that could be done.

This is what the railways are doing for the great essential evils of India, natural and artificial.

#### 9. What can they do for the defence of the country?

Nothing can show in a more striking manner the effect of bias, than that it is so constantly said, how important the railways are for the defence of the country, when everybody knows that so far from the railways defending the country, all the army of India could not defend them for a single day.

In case of rebellion, everybody knows that every railway would be destroyed in twenty-four hours, and the Government left in the most helpless and pitiable state that could be imagined, except where there was water-carriage; for not only would there be no railways, but there would be no other land-carriage, the Government having given up their transport depôts, and left themselves without the means of moving troops, except such as they could gradually collect from the natives. Nothing can be imagined more desperate than our condition would thus be, excepting where we had river navigation. Even canals would be immensely more defensible than railways, because we could keep on them armed steamers, running over every part of them, without interfering with the navigation, for all other purposes. Thus, in respect of defences, the railways are the most terrible delusion—nothing in the world but a trap of the most perfect kind; and if we do not keep up flotillas and transport depôts, it is impossible that any Government could be in a more dangerous position.

This whole subject of transit is so well illustrated by the case of the Godavery navigation, that I here give some account of it. This river and its main branch—the Wurdah—flows from the heart of Central India to the port of Coringa, 450 miles. Now, at the lower end, we have a perfectly safe harbour from which goods can be shipped to every country in the world. At the upper we have a populous and very fertile country, which has hitherto been perfectly isolated, from the expense of so many hundred miles of land carriage destroying all trade worth mentioning, so that nothing to signify is carried out of it or into it, excepting timber, which is floated down the river.

This district—

1. Produces the only cotton fully equal to that of America.
2. A coal basin of good extent and excellent quality exists in the Wurdah.
3. There is an unlimited supply of timber.
4. It produces the finest edible oil seeds in abundance.
5. It produces wheat of excellent quality, and of course, various minor articles.



At the lower end, besides produce and manufactured goods from any part of the world which can be brought to the port, the coast district produces immense stores of grain from the irrigated lands, and salt to any amount at a nominal cost.

Now, here are two points, each wanting what the other can supply, and as much cut off from each other as if they were at opposite ends of the world—nay, much more, for the cost of carriage by land is 4*d.* a ton a mile, or 7*l.* for 450 miles, while 3*l.* or 4*l.* would convey goods to the end of the world by sea. Only a few years ago cotton was sold at 1½*d.* a lb. and wheat at 5*d.* a bushel in those central tracts, and the people are at this moment consuming not a fifth part of the salt that is essential to health, and the whole exports and imports of the port of Coringa, the proper outlet of 20 millions of people, was, before the Delta works, 70,000*l.* a year, instead of at least 7 millions, as it ought to be, or about one-hundredth part of the trade due to such a population.

Now we have seen by the actual traffic in other places that the traffic ought to be from 1 to 2 millions of tons. If the people of the interior could obtain food and other things from a distance cheaply, they would be set free to grow the peculiar product of the country—their beautiful cotton and other things—to ten times the extent they now do. Think of their growing perhaps 2000 or 3000 tons of cotton, while the operatives of Lancashire are starving for want of it, and being so miserably poor that they can't afford to buy salt, while their cotton is worth 1*s.* a lb. in Manchester, and they ought to be in the most flourishing state, if only they could employ 2 millions of acres out of their 50 millions, receiving for it, at 10*d.* a lb. and a produce of 100 lbs. per acre, 8 millions sterling per annum. Even within a very few years, if really cheap transit were established connecting these two points, the traffic would be like this:—

|                                                  | Tons.   |
|--------------------------------------------------|---------|
| 1 million acres of cotton, at 100 lbs.           | 50,000  |
| Coal .. .. .                                     | 100,000 |
| Timber .. .. .                                   | 20,000  |
| Salt for 20 millions, at 20 lbs.                 | 180,000 |
| Rice for 1 million of people, at ½th ton         | 200,000 |
| Various other articles of both export and import | 200,000 |
|                                                  | <hr/>   |
| Tons ..                                          | 750,000 |
|                                                  | <hr/>   |

This is only four times the present traffic on the main Godavery Canal, while the population affected by it will be ten times as great, and though there is no great mineral staple like coal in the Delta. The trade of the port from the irrigation and navigation in the coast districts has already increased from 70,000*l.* to about 1,000,000*l.*, or nearly fifteen fold; and if the interior were thus thrown open to it and enriched, making this port the outlet of 20 millions instead of 2, its trade would certainly be increased five or tenfold; but all this entirely depends upon the *cost* of transit. If, as we expect, that is reduced to ¼*d.* a ton a mile, or 10*s.* a ton for the 450 miles (cotton, for instance, costing only ⅓*d.* per lb. for carriage), all this change must certainly take place, and to mention only one effect on distant places, 2 millions of acres of cotton additional at 100 lbs. would throw into Manchester 200 million lbs.—one-sixth of its present whole supply. And this supposes that only one-twenty-fifth of the area of the central district is cultivated for cotton.

Now suppose we had, instead of this water-carriage at 10*s.* a ton, land-carriage on this line at from 1½*d.* to 8*d.* a mile—or from 50*s.* to 16*l.* for the 450 miles—not a tenth part of this traffic could take place, and the central districts would be as effectually cut off from the world as they are at present.

But while stating this case it is of the greatest importance that the ideas entertained by men in authority in India should be shown, in order to enable us to understand the astonishing misapprehension of the subject of transit that prevails, and to account for the fatal neglect of these vital works. In the Report of the Commissioners on the Godavery Navigation in 1866, this paragraph occurs:—"We consider, however, that the traffic on the Godavery along the whole length of 400 miles is not likely to attain the standard of the Delta traffic—24,000 tons over each mile of canal—for a considerable number of years;" that is, that the traffic on a *main* line affecting 20 millions, should not for many years equal the *average* traffic on many lines, most of them utterly insignificant, affecting a population of 2 millions. The



average they give is only one-eighth of that on the main line for 2 millions of people.

Again, the salt alone for 20 millions at the rate of actual consumption in the coast districts would be 180,000 tons, seventy times their whole traffic after many years, according to the Commissioners' estimate.

They then go on to state the actual trade of the Central Provinces at present. Is it not strange that these Commissioners should not see that this has nothing whatever to do with the matter? The opening of the navigation is to bring into existence a new traffic. What had the passenger traffic between London and Blackheath before the railways were made to do with the traffic on them? It seems unaccountable that in these days any man could be found so ignorant of the simplest principles of transit, much less gentlemen specially selected to report upon a grand line of communication.

If we should argue that the present traffic at 4*d.* a ton a mile is so much, and therefore we may safely estimate that when it is reduced to  $\frac{1}{4}$ *d.* it will be at least 100 times as great, we should be nearer the mark.

Imagine a calculation of the returns from the Blackheath railway, made from the actual number of passengers by coaches on the common road, before it was constructed.

In another paper in the Blue Book of 1868 on this subject, one of the members of the Council of India says, "Now if the Government of India is prepared to spend from 3 to 5 or 6 millions on the Godavery and Weingunja works, and to wait a quarter of a century for any return on this outlay," &c. Including the Weingunja the whole distance would be about 650 miles, which for 6 millions would be 10,000*l.* a mile. The actual cost of the first 220 miles, including the flotilla, all the buildings, preliminary expenses, surveys, &c., has been about 45,000*l.*, or 2000*l.* a mile, and the cost properly chargeable to this part is not above 1500*l.* a mile, to make a return for which at 7 per cent. would require a traffic of 27,000 tons at 1*d.* a mile, leaving to the people a saving of nearly 3*d.* a ton, or 20 per cent. more on the capital, and this is besides passenger traffic. This 27,000 tons would supply 3 millions with salt, one-seventh of the population.

Thus this member of the Council of India estimates the cost at from three to six times what the part already opened has actually cost, and thinks that it will take twenty-five years before fair returns are received, while if one-seventh of the traffic actually carried on in the lower part of the river among 2 millions of people existed on the upper river for 20 millions, the saving would be 20 per cent., and if only one-fourth the present cost of land-carriage were charged as tolls on that quantity, the returns would be 7 per cent., covering interest and management, and this quantity of 27,000 tons is one-seventh of the whole supply of the one item of salt required for that population.

How can we be surprised at any mistakes made about such works when such extraordinary ignorance of the whole subject of transit is shown in the papers of those who are in high authority in India.

But the state of the case will be shown more distinctly by another fact. The very gentleman above quoted was a party to the construction of the South-eastern railway from Calcutta. This line of thirty miles to the Mutlah cost 600,000*l.*, and in consequence of its not paying its working expenses, the company have made it over to the Government, who not only have to pay 30,000*l.* a year interest, but also a large sum to make up the working expenses. The deficiency three years ago was 3000*l.* Now this very sum, 600,000*l.*, which is required for this first-class main line of water-transit to carry any quantity at  $\frac{1}{4}$ *d.* a ton a mile for 400 out of 520 miles, to give access to the only thoroughly good cotton field in India, a work which is considered a dreadful mistake by this gentleman, this very sum has been spent on thirty miles of single railway on so worthless a line that it does not near pay its working expenses, and could only carry an insignificant quantity at from 1 $\frac{1}{4}$ *d.* to 8*d.* a ton, and for that mistaken work the money was found without a word of opposition as fast as it was wanted, and the work executed, I believe, in two or three years. And it has taken twenty years to get half that sum for this grand line; and it is evident that, according to the present state of things, it will take several years and an incessant contest to get the other 500,000*l.* now estimated to be required for it. Now what are we to think of such perverted ideas on this subject as these facts imply?

On the one hand, 600,000*l.* is paid without a question for thirty miles of single railway, carrying by the last statement about 7000 tons a year, and entailing a charge



upon the taxes of about 35,000*l.* a year; while the same sum cannot be obtained without incessant contests for 400 miles of a line that can carry any quantity, and that, calculating from the actual traffic on other water lines, must before very long be several hundred thousand tons; and every 100,000 will save the country, at 4*d.* a mile, 1250*l.* a mile—about cent. per cent. on its cost.

If these facts and calculations do not show that the subject of traffic in India requires discussion, and that those who have had the management of it require instruction, certainly nothing can show it.

Surely it is impossible that anything could put in a more striking light the extraordinary false judgment on this question than the comparison of these two works, 600,000*l.* spent without a question on thirty miles of single railway on a line that will not pay expenses, and the same sum utterly reprobated to make a water communication of 520 miles on one of the most important lines of India, and in respect of cotton quite the most important, and in which we have abundant data to show that it will save the country much more than 100 per cent. on its cost. It is the want of this communication alone that makes the difference between the Central Provinces paying 1 rupee a head in revenue and the rest of India 3 rupees, a difference which would give an increase of revenue of 2 millions a year. In the last Cotton Commissioners' Report it is expressly shown that the Hinghinhaut cotton is the best in India. And when one of the American cotton planters travelled from Allahabad to Bombay, he reported that every day as he approached Nagpore he perceived by the cotton that he saw growing that he was getting into a soil and climate more and more suited to it, and every day, as he left it on his way to Bombay, that he was getting into a country less suited to cotton. Of course the grand point to be kept in view in such a case is to set the people and the land free for the production of this important staple as far as possible by providing for the supply of all the necessities of life from other tracts where such cotton cannot be grown. One million acres, only 2000 square miles, a small portion of this cotton tract, will give about 100 millions of pounds, or one-twelfth of a full supply for Manchester.

But to show distinctly the profits to the country by such steamboat canals, and the consequent cheap transit, we may take the case of the proposed Lower Ganges Canal. This work is to be led from the Ganges at a point 20 miles above Rajmahal, or 200 miles from Calcutta, where a weir will be thrown across the Ganges. The canal will probably be 150 yards broad at the head, and 9 or 10 feet deep. The whole estimate for this work with its weir 5 miles long, all its irrigation, &c., is about 2½ millions. Now the present traffic on the Nuddea rivers being 1,900,000 tons, during four or five months in the year, if 1 rupee on that traffic only were levied as tolls on the canal, the receipts would be 95,000*l.* a year, or nearly 8 per cent. on the whole capital. This toll would be one-eighth of a penny per ton per mile, while the saving in draught, time, and risk compared with the river could not be less than ½*d.*, or four times the toll—in which case the public would gain 24 per cent. after paying the toll. But this takes no account of—

1. What is carried during the other months round by the Sunderbunds.
2. The enormous additional traffic in consequence of the reduction of cost of transit.
3. The passenger traffic.
4. The water-rates on a million acres of irrigation.
5. The value of water supplied to Calcutta, &c.

The total goods traffic could not be less than 4,000,000 tons almost immediately, on which a toll of ¾*d.* would amount to 16 per cent. in the cost of the whole scheme, including all the distribution and other works of irrigation, besides all the benefits of the passenger traffic, and a saving of three times as much, or 48 per cent., to the public.

Now only let the results of such a work be compared with the railway in the same line—not paying bare interest—not carrying one-fortieth part of the goods traffic nor a tenth of the passenger traffic—doing nothing in the way of irrigation or drainage—in a tract always liable to famine—and for years past desolated by fever, from want of the regulation of this water.

Is it not astonishing that hitherto it has been impossible to get the smallest approach to a hearing of this question: Which work is suited to the circumstances of the country—such a steamboat canal, including irrigation and drainage, or a railway?



## The railway—

Costing 24,000*l.* a mile,  
 Carrying 100,000 tons a year,  
 „ 1000 passengers a day,  
 Charging from  $\frac{3}{4}$ *d.* to 3*d.* per passenger, and from 1 $\frac{1}{4}$ *d.* to 8*d.* for goods,  
 Not paying bare interest,  
 Not irrigating,  
 Not draining,  
 Quite indefensible.

## The canal—

Costing 12,000*l.* per mile, including all irrigation works and thousands of miles of large-branch canals, probably about 4000*l.* per mile for the canals alone,  
 Carrying 4,000,000 tons a year on the main canal only,  
 „ 10,000 passengers a day,  
 Paying in tolls and water-rates 20 or 30 per cent.,  
 Saving the public three times as much more,  
 Irrigating a million acres,  
 Perfectly draining the country,  
 And very defensible,  
 Far more convenient for passengers,  
 Removing all fear of famine,  
 Rendering the district perfectly healthy,  
 Yielding a revenue of at least half a million, or one-tenth of the salt-tax.

Having thus really considered what have been the results of the 120 millions to be spent on the first 5000 miles, we are in a position to consider what will be the effect of spending another 100 millions on extending them. Now the first point to be observed is this, that all the lines of first importance being already occupied, the new lines will be lines of comparatively very small traffic, certainly not one-fourth of that on the present ones. Hence it is quite certain that they cannot pay anything like the returns of these first-class lines. We need not suppose that they will cost as much as the others. I grant that the waste of money on those already laid has been monstrous, and I have not the smallest doubt that had they been constructed by the Government they would have cost about half of what they have.

But now that the value of money has so diminished, perhaps we may estimate the average cost of single lines at 1200*l.* a mile, and certainly if we estimate the traffic at one-fourth of that on the present railways we shall suppose what is far beyond what the average of these 8000 miles will carry. The net returns would then be about one-sixth of those at present, or 200*l.* per mile, which is 1 $\frac{1}{2}$  per cent.; or, if the money is obtained at 4 per cent., involving a further charge upon the taxes of 2 $\frac{1}{2}$  millions.

It cannot possibly be imagined that the new railways laid in such vastly inferior lines of transit can pay anything like what the present lines do.

We have an example of one of these secondary lines already in the South-eastern Railway, already adverted to, carrying about 7000 tons a year and 300 passengers a day, and costing the Government 3000*l.* a year in working expenses, besides interest, and most certainly a large portion of this 8000 miles would be far inferior to this line, which leads immediately from Calcutta itself. The lines in out-of-the-way parts of the country could not possibly have anything like such a traffic as that line if they charged the same prices; so that it is most certain that a very large portion of the new lines would not even pay their working expenses.

Thus there can be no question that the results of the first 4000 miles are absolutely conclusive as to the additional 100 millions entailing a terribly heavy tax upon the country—much heavier than the first expenditure has entailed.

But what can be the object of carrying out the plan, when it is certain—from the enormous experiment which has cost the country 120 millions, and what is much more, twenty years—that the objects aimed at cannot be attained by farther expenditure in that way, and when it is equally certain, from overwhelming data, that every object desired can be fully attained by a far less expenditure on other means. This same 100 millions would certainly provide 50,000 miles of steamboat navigation, and at the same time irrigate 50 millions of acres.

We have ample data on all these points. Nothing in this matter is now theory. Thousands of miles of single railway have been laid at from 12*l.* to 20,000*l.* a mile, &c.



I have already shown what they have cost, and with what results. And so also with steamboat canals and river improvements.

And with respect to the speed, supposing the latter could only carry at 15 miles an hour (and it is quite certain that there is nothing to prevent their being worked at a higher speed), whether the 4 per cent. of passengers travelling first and second class are carried at 15 or 25 miles is a matter of utter insignificance compared with the other points in the question.

These are not theories, but simple matters of fact, perfectly notorious, and nothing but keeping them out of sight can keep up the delusion respecting the superiority of railways to water transit and irrigation for India.

Is it not perfectly wonderful that it should be still necessary to press the consideration of these perfectly well-known facts, and that in spite of them men should be still dreaming that railways should be suitable works for India? To give an example of the actual cost of canals in India, we may take the Ganges Canal; the total cost has been 2,300,000*l.*; the main lines of canal are 650 miles long, besides thousands of miles of branches. If the whole of this money had been spent on the main canals alone, it would have been 3500*l.* a mile; but taking one-half for the irrigation, it leaves only 1750*l.* a mile, and but for the upper 30 miles of it in the hills, on which about a million was expended in encountering difficulties which would have been avoided altogether if the canal had been begun clear of the hills, the cost would have been only about 1000*l.* a mile; and this provides for a change of level of about 500 feet in slope and locks. The Ellore Canal, from the Godavery to the Kistnah, about 25 yards broad, cost about 1000*l.* a mile; the Toombudra Canal in Madras, now nearly completed, 190 miles, and 90 yards broad at the head, is stated to have cost about 1,100,000*l.*, or 6000*l.* a mile, with about 400 feet of fall, and in an undulating rocky country with very heavy works on it. So also with the improvement of rivers. The cost of opening the Godavery to 230 miles from the sea has been, so far as I can ascertain, 450,000*l.*, or 2000*l.* a mile; but of this a considerable sum has been for preliminary surveys, tramways, flotillas, &c., which do not properly form part of that expense, so that the actual cost has not been above 350,000*l.*, or 1500*l.* a mile; and the estimate for the completion to the third barrier, which will be 400 miles of navigation, is about 650,000*l.*, or 1600*l.* a mile. This puts in a striking light the difference between river conveyance and railways. The opening of this river to carry millions of tons at from  $\frac{1}{4}$ *d.* to  $\frac{1}{2}$ *d.* a ton will not have cost one-twelfth of that of a railway to carry an insignificant quantity at from  $1\frac{1}{4}$ *d.* to 8*d.*, and then not pay its interest.

And in continuance of this 400 miles of the river Godavery and Wurdah, at least 300 miles of the Weingunja, besides some other rivers, may be rendered navigable at something like this trifling cost, giving 1300 miles of connected navigation at probably a cost of 2 millions, the price of 170 miles of single railway at 12,000*l.* a mile.

Is it possible that anybody can contend that 1 mile of single railway, carrying 100,000 tons, is of more value to India than 9 miles of navigable river carrying millions of tons, and that at one-fifth of the cost of transit?

Most certainly we have thus ample data to show that another 100 millions, now spent in water, would, if the works were projected with fair engineering skill, yield a direct return in money of 20 per cent., or 20 millions a year, besides all the other enormous advantages.

Can anybody attempt to argue that the Godavery district, for instance, would have been more benefited if the half-million spent in irrigation had been spent on 40 miles of railway instead of on a thousand miles of navigable canal and 600,000 acres of irrigation? Would 40 miles of railway have raised the revenue from 230,000*l.* to 480,000*l.*, and the exports from 60,000*l.* to 1,000,000*l.*?

Instead of this increase of revenue the district would certainly have been chargeable with at least half the interest of the expenditure, or 12,000*l.* a year, without any perceptible increase of revenue or exports. I do trust this Association will take up this matter before the Government are committed to this desperate step of saddling India with another 100 millions spent in this way, when the results are so absolutely certain.

Notwithstanding all that has passed, I cannot but hope that if this is pressed upon the authorities, they will at length hear both sides of this vital question, when the data are so abundant and so unquestionable. But I must also express a hope that the Houses of Parliament may now be so far interested in this great Indian question as to appoint committees to investigate the subject of the material improvement of



India, which in my opinion is the only thing that can effectually meet the case, and fully secure a fair hearing to both sides of it.

I have many reasons to believe that the Old India party are too far biassed and committed to one side to be willing to allow of their opponents being heard if they can prevent it.

The remedy for certain deep-seated evils in a country must come from without.

No council composed of West India or Southern States landowners would ever have abolished slavery, and unless our members of Parliament had taken it up, slavery would have existed in the West Indies to this day. So also with our East Indian evils—famines, fevers, salt-tax, the waste of India's great treasure—water, the want of cheap transit, &c., they will continue so long as the Old India party is permitted to keep everything in their hands, and there is no decided move made by non-Indianized men.

We have now, I grieve to say, one of the most striking proofs possible of the necessity of Parliamentary interference in the affairs of India. Two or three weeks ago I heard that the Government of India had ordered the expenditure on the Godavery irrigation works to be diminished this year by 15,000*l*. On this being represented to the Secretary of State, he, with great judgment and promptitude, telegraphed to India to reverse the order. It was, however, too late. I have now a letter saying, "We have been obliged to dismiss a large number of men, something like half; many of them our best men. Next year's grant is to be no larger, and unless the scheme is carried on by loans you may expect to see it languish on for years with very little progress. The want of money will, I think, decide them against the 3rd Barrier Works. These reductions have thrown us back a couple of years." Could any person believe such a state of things? Here is a work of the very first importance, opening up all Central India to the world at a practicable cost of transit, a work which the Secretary of State expressly promised to the House of Commons should be prosecuted vigorously, and on which labourers had been collected from hundreds of miles, stopped just as they had got fairly into work for the season, without authority from home, and contrary to the Secretary of State's purpose, to save an expenditure of 15,000*l*. Thus faith is completely broken with the House of Commons and with the coolies dragged from their homes, for the sake of such a sum in the year's expenditure. If it were a railway leading to nothing, and incapable of paying its working expenses, there would not be a day's delay for the sake of a million, and if it were an Abyssinian war, 6 millions additional are found without even a question being asked; but for this important and remunerative work, upon which alone hangs the well-being of 20 millions of people, faith is to be broken, and the whole work thrown back for any time for want of 15,000*l*. It is really incredible that such childishness should be exhibited in respect of these great national works, in which England herself is so directly interested. Any number of millions can be had for 4 or 5 per cent., and yet this utterly insignificant sum must be saved at this enormous cost. If such things as this, and 1½ million of people being allowed to die of famine, do not show that England must interfere in the affairs of India, what can show it?

The CHAIRMAN.—I am sure we have all listened with much interest to the very able paper brought before us. It embraces such an amount of figures that it is almost impossible to carry it in our minds. I should be very happy indeed to hear the remarks of any gentleman on the paper; but I should propose, as it is impossible now fully to discuss a question of such vital importance for India as communication either by railway, or tramway, or water, combined with irrigation, that this able paper should be printed and circulated amongst the members of this Association, and that a future day be named, perhaps immediately after the opening of Parliament, for discussing the subject.

Mr. RIDDELL said he agreed with the Chairman that it was impossible that so great a question could be properly discussed at the present meeting. He thought that the question to be discussed ought to be, not that which had been indicated by Sir Arthur Cotton, *viz.* whether canals ought to be dispensed with, and whether the Government of India and the Indian Council had done right in devoting the money they had to the construction of railways, but whether railways and water communications were not both necessary for India. It appeared to him that time was an element in the question of transit quite as much as cost. No doubt canals had the advantage of cheapness; but, for the civilization of India, for making it one homogeneous empire, railways were, in his opinion, essential. The great prosperity which



accrued to the Central Provinces during the cotton famine was entirely owing to railways. He considered that 100 millions was a very small sum to be expended in twenty years. All that the Government were proposing to do was, not to expend 100 millions in a year, but, like statesmen, to lay out a plan to be carried out hereafter, so as to avoid the evils from which we suffer in England, of useless lines, and competing lines where there was barely sufficient traffic for one line. Though it was true that on one single line in India the traffic was insufficient, if we took the Ganges, on which there had been for centuries a large traffic, the railway running alongside the river carried a very large traffic, both in passengers and goods, showing that the traffic could afford to pay the high rates charged by the railway. That of itself proved that railways were required. The 300 millions which at present was charged on the taxes of India was, in fact, only a loan. There could be no reasonable doubt that, in the course of a very few years, the railways now in existence would far more than pay their own cost, and compound interest on the cost.

Mr. GEORGE CAMPBELL agreed with the Chairman in thinking that it was very desirable a detailed discussion should take place at a future date, and he would therefore only say a few words now. He concurred with Sir Arthur Cotton in thinking that discussions of this kind were very beneficial. However able and however honest the members of the Indian Council might be—as he believed them to be—still their discussions were not public discussions. Moreover, it was almost hopeless to expect that Parliament should ever devote itself to Indian subjects. It was hoped that the transfer of India to the Crown would cause members of Parliament to take a greater interest in Indian affairs, but subjects arising in our own country every day so over-taxed the time and strength of Parliament that that hope had been disappointed, and indeed less interest seemed to be taken on Indian questions in Parliament than before the transfer. Therefore it was of immense importance that discussions of this sort should take place outside the Council and outside Parliament. He only regretted that the very illustrious name of the distinguished man who had read the paper had not brought together a meeting even larger, and he hoped that some day some machinery would be devised by which large numbers of men interested in India might be brought together for the discussion of such questions as that now before the meeting. He agreed with Mr. Riddell in deprecating a discussion on this question from a comparative point of view. The question was not whether water communication was better than railway communication, but whether railways, taken positively, were good or bad, and whether they were worth the money expended on them. After an experience of twenty years, no man connected with India, who was not altogether wedded to water communication, would dispute the fact that the railways in India had been a decided practical success. Though they had cost a good deal more than they would cost now with our improved experience, still, in an engineering point of view, they had been successful, being good, permanent, and substantial works. In a social and pecuniary point of view an immense amount of success had been already realized, and a much greater success would no doubt be realized in future. He had listened with some astonishment at the statement of Sir Arthur Cotton, that there was not one man in ten who travelled in India who went by railway. He thought that was an error. The result of his own experience, gained in many parts of the country, was that almost every one who wanted to travel a considerable distance in India travelled by railway. He was astonished to find so many travelling by it, considering the high charge by the railway, and considering that the natives regarded time as of such small value. Therefore in a passenger point of view, the Indian railways had been already eminently successful. With respect to goods traffic, he agreed that so far they had not been so successful as to carry the traffic of the country to the degree they ought to carry it, and which he hoped they would carry it; but nevertheless they had already been very successful. The goods traffic of some of the existing railways had been certainly their weak point, but he hoped to see that traffic very much increased, and the rates very greatly cheapened. Already in point of goods the railways had been of enormous benefit to the country. With respect to the salt trade, he agreed fully with Sir Arthur Cotton in deprecating the enormous tax on salt. He had himself in every possible way represented the great hardship of that tax; but it was a patent fact that the existence of the Great Indian Peninsula Railway had immensely cheapened the price of salt in the Central Provinces—the part of India with which he was at present specially connected—though the facility of transit and the consequent cheapening of salt had given the Government



the opportunity of putting a greater tax on it. That so far was a misfortune, but otherwise the people had undoubtedly gained by the transit by railway. With respect to the canalization of the Godavery, he was one of those who had urged that the works, having been begun, should be rapidly carried to completion, but he deprecated the depreciation of the existing railways. With regard to the future, he agreed that caution ought to be exercised, that care should be taken that the success of the great lines did not induce us to throw away our money on too expensive lines in less paying directions; and he hoped as the great trunk railways had been already made at a great expense, they would be supplemented by cheap branch lines, bringing traffic to the main lines.

Mr. DENT entirely concurred in what Mr. Riddell and Mr. Campbell had so ably stated. The great mistake made in India was commencing with such very expensive lines. He (Mr. Dent) had been one of the first to advocate cheap lines, and he had the authority of Mr. Purser, a practical engineer of very great experience, who was for many years chief engineer of the East India line in the North-west Provinces, that narrow-gauge lines, varying from 3 feet to 4 feet, could be constructed at 3000*l.* a mile, enabling the traffic to be carried at a speed of 15 to 20 miles an hour. He considered that if 15 miles an hour could be attained, that was quite sufficient speed for Indian traffic, whether passengers or goods, for many years to come, and that railways of that description, while they would be very little more costly than ordinary metalled roads, would, in practice, be a hundred times more valuable, the railways not being liable to be stopped, as the roads would be, during the heavy rains, and being less expensive to maintain. He concluded by referring to the Oude Railway, a narrow-gauge line of 27 miles in length, from one of the stations on the East Indian line to the banks of the river opposite Moorshedabad, the traffic therefore being dependent on the difficulty of crossing the river, which was scarcely navigable in dry weather. That railway, though constructed with light rails, had now been in operation six years; it had cost 80,000*l.*, upon which it was now yielding a very fair revenue, the last return being 4 per cent.

Mr. HYDE CLARKE said, while he agreed that it was desirable that a very large expenditure should be made on works of irrigation in India, he could not concur in many of the statements made by Sir Arthur Cotton. He thought it was desirable that there should be a detailed discussion with regard to the figures given by Sir Arthur, but bearing in view many of his statements, he thought it would be exceedingly undesirable, considering that a discussion had been invited, that the paper should be printed and go before the world without some disclaimer of some of the statements that had been made. Sir Arthur Cotton had referred to very many remarkable cases of rivers and canals still carrying an enormous amount of traffic. There was not one of those rivers and canals that had not alongside of it a railway system more complicated and more expensive than anything we had in India at present. To take the small case of the Bridgewater Canal, carrying, as we are told, 2,000,000 tons of goods (a large proportion of which consisted of minerals, which were not to be found in most parts of India), there was alongside of that canal a railway system, developed since the canal system was established. In Holland and Belgium, where the people had been brought up to feel as much attachment to canals as Sir Arthur Cotton himself, a system of railways had been introduced which either competed with or superseded canal communication. With regard to America, we all knew that throughout the basin of the Mississippi, a river which afforded the district it traversed water communication for passengers and goods such as we did not possess in India, there was a complete system of railways. Again, the district served by the Erie was also served, not by one railway alone, but by various competing railways, some of them even of a circuitous character. Looking at the fact that the canal systems and the river systems of Europe and America had been supplemented by railways, it was too late in the day to suggest that the carrying out of all railways in India should be stopped, which would be the result of acting on the line of argument which Sir Arthur Cotton had advanced. From the title of the paper he had expected that Sir Arthur Cotton was going to insist that 100 millions was not a sufficient sum to expend in railways in order to put India in a fair position to compete with the United States.

A Member, interrupting Mr. Hyde Clarke, suggested that the course which had been proposed by the Chairman should be followed, *viz.* "That the discussion on the paper should be adjourned to a future day."



The CHAIRMAN remarked that it appeared to be the feeling of the meeting that it was quite impossible to discuss the matter fully without adjournment, but it would be as well to continue this preliminary discussion till five o'clock.

Mr. HYDE CLARKE, in continuation of his observations, said that he thought it would be a reflection on the meeting if they allowed a paper, expressing such strong opinions as those of Sir Arthur Cotton, to go forth to the world without some remonstrance against it. Admitting some of the facts stated by Sir Arthur Cotton—admitting that the Mississippi, for instance, carried an enormous traffic, and other facts of that kind—he objected to the mode in which the facts were put together, and to the deductions which Sir Arthur Cotton drew from them. Taking, also, the article of coal, though coal was still brought to London by sea, very much coal was carried by railway, and for an enormous amount of goods the railways were able to compete with the water. A great deal had been said about the great cheapness of water-carriage in India as compared with railways, but there was not the least reason in the world why water-carriage in India, in particular places, should not be much cheaper than the railway, as was the case all over the world; but the question was whether you had better not lay down a railway in a particular district where you had not facilities for laying down a canal, or improving a river communication. Sir Arthur Cotton had compared the rate of  $\frac{1}{2}d.$  a ton per mile by canal with  $4d.$  a ton by road, which he had taken as the average. He did not see why the railway rate should not be taken at the same figure for the purpose of comparison with the rate by road; he did not see why goods in India should not be carried as they are in England, as coals are in some cases, at  $\frac{1}{2}d.$  or  $\frac{3}{4}d.$  a ton a mile. These considerations he thought showed that there was something unsound in the doctrines propounded by Sir Arthur Cotton, arising, as he believed, from the circumstance that he endeavoured to promote one method for the improvement of India, abolishing, so far as he could, all other modes of improvement; whereas in his (Mr. Hyde Clarke's) view every one of those modes of improvement ought to be adopted. India would take all the commerce that could be given to it from this country. He had no personal interest himself in Indian railways; he should advocate irrigation as much as railways; but he did not look to canals and irrigation as the only means of benefiting India, and he did not see why railways should not be carried out as well as canals and irrigation works. Sir Arthur Cotton had assumed that the cost of railways in India had been 1,300,000%; but he (Mr. Hyde Clarke) thought, when the figures were looked into, that figure would be reduced to a much lower one. He thought, too, that exception was to be taken to the period of time put by Sir Arthur Cotton for the completion of the railways. Though it was true that the existing railways had taken twenty-seven years to bring to their present condition, that was because the Government of India had carried out in that period what ought to have been carried out in less time; but it by no means followed that another twenty-seven years would be spent in supplying the mileage of railways necessary for India. With regard to the traffic on the railway going to Blackwall, the estimate of the traffic would not have been taken on the coach traffic, but on the actual traffic of the road. As to the cases of the South-eastern Railway and the Eastern Bengal, they were both in exceptional positions—the South-eastern Railway stood in the same exceptional position among railways as the Ganges Canal did in the general system of canals, and the Eastern Bengal was a line which was undeveloped. Having said these few words by way of caution, he would only add his tribute to the zeal which had always prompted Sir Arthur Cotton in advocating measures for the improvement of India, and the ability which he had brought to bear in support of them.

The CHAIRMAN announced that letters had been received from the following gentlemen, regretting their inability to be present at the meeting, which he suggested afforded an additional reason why the discussion should be adjourned:—Lord Ellenborough, Sir Erskine Perry, Sir George Pollock, Mr. Hugh Mason (Ashton-under-Lyne), Mr. John Briggs (Sussex), Mr. Rustomjee Vicajee, the Mayor of Liverpool, the Mayor of Manchester, Lord John Hay, Mr. Walsley (Stockport), Mr. W. Tayler, Mr. R. N. Fowler, M.P., Mr. Thomas Emmett (Oldham). With regard to what Sir Arthur Cotton had said about the old Indian party, he thought he was rather mistaken, for he believed they were very anxious indeed to carry out what was most conducive to the interests of India; and he had no doubt that the result of this discussion would be to afford information to those who had to do with the government of India, which perhaps they might be able to utilize.

Sir ARTHUR COTTON, in reply, reminded the meeting that all that he asked for was that the question should be discussed: that 100 millions should not be spent without a single word of inquiry or hearing what people had to say upon it. He did not ask for it to be settled, but to be discussed; and he thought in a matter of such extreme importance it was desirable that the paper should be printed and put into the hands of those who felt an interest in the matter, and who could give their time and attention to the consideration of it. He had given very few opinions, but had merely stated facts. With respect to the cost of railways, the quantity of traffic, and so on, he had gathered those from the Reports, and the adjournment of the discussion would give time for many persons to look at those figures, and consider them, and form their own conclusions on them. He considered it of vast importance—particularly as nobody had been allowed to say one word on his side of the question—that time should be given for the cost of a steamboat canal as against the cost of a railway through the same line of country, what the one could do, and what the other could do, and which was the most beneficial.

Mr. CAMPBELL suggested that it should be defined whether the subject of discussion was, "Are railways good or bad?" or, "Is railway communication or water communication best?"

Sir ARTHUR COTTON replied that the subject was, the question of expending 100,000,000*l.* on railways, in addition to what had been already expended.

Mr. BRIGGS seconded the proposition that the paper be printed, with what little had been said upon it to-night, and distributed amongst the members, and that the meeting be adjourned to this day fortnight, or any other day to be fixed by the Council.

The CHAIRMAN observed, with respect to defining the subject of discussion, he apprehended it would be open to any one to advocate any mode of transit. He himself would be inclined to advocate tramways in connection with the present railways.

On the motion of Sir HENRY RICKETTS, a vote of thanks was passed to Sir Arthur Cotton for his paper.







PROPOSED ADDITIONAL EXPENDITURE OF 100